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PUBLIC HEALTH REPORTS.

STATEMENT OF THE SANITARY CONDITION OF SEATTLE, WASH.

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The city of Seattle is situated on a bay of Puget Sound. The town site rises in a series of hills almost from the water's edge, the highest point in the city being about 643 feet above the sea level. It covers an area of about 55,000 acres, and encircles two fresh-water lakes and skirts the western border of a third.

The climate is characterized by a short, dry summer, with only moderately warm days and cool nights, and a very rainy, but not cold, fall, winter, and spring. The maximum temperature of 1908 was 88° F. on August 18, the minimum 25° F. on February 1, and the mean for the year 50.9° F.

During June, July, August, and September of 1908 the total precipitation was 1.44 inches; during the rest of the year it was 26.81 inches, making a total of 28.25 inches for the year.

It is estimated that the population of Seattle has nearly doubled in the last 3 years. The last United States census (1900) reported Seattle as having 80,671 inhabitants. The city directory estimate for 1908 is 276,000, and this figure is the one that has been used by the local health department in computing the death and birth rates for 1908.

The rapid growth of the city, the phenomenal rise in property values, and the erection of hasty and cheap wooden buildings handicapped the development of sanitation in the city, and it was not until the occurrence of plague in October, 1907, concentrated attention on the city's insanitary condition that the advocates of an improved municipal sanitation were given a hearing. The campaign of cleaning instituted by the United States Public Health and Marine-Hospital Service in the fall of 1907 opened the eyes of the taxpayers to the necessity of an up-to-date health department. The reorganization of the department of health and sanitation was accomplished in March, 1908. Advantage was taken of the more recent advances in municipal sanitation and a department established that ranks with the best in the United States. The drop in the death rate from 9.27 in 1907 to 7.35 in 1908 is claimed to be due to the cleaning campaign begun in the fall of 1907 and the continuance of the work by the reorganized health department. The birth and death rates for the years 1905-1908, inclusive, as given by the health department, are as follows: Average birth rate per 1,000 in 1905, 11.38; 1906, 12.21; 1907, 13.07; 1908, 13.29. Average death rate per 1,000 in 1905, 7.37; 1906, 7.80; 1907, 9.27; 1908, 7.35.

The principal causes of death during 1908 were: Tuberculosis, 218; external violence, 191; organic heart disease, 186; chronic

nephritis, 98; cancer, 94; pneumonia, 93; diarrhea and enteritis (under 2 years), 73; apoplexy, 71; senility, 70; suicide, 68; premature births, 45; typhoid fever, 43. In 1907 there were 91 deaths from typhoid fever. The total number of deaths in 1908 was 1,953, as compared with 2,040 in 1907, notwithstanding an estimated increase of population from 200,000 to 276,000.

ORGANIZATION OF CITY HEALTH DEPARTMENT.

As now constituted, the Seattle department of health and sanitation is headed by a commissioner, appointed by the mayor and confirmed by the council, whose term of office is five years. The present incumbent is Dr. James E. Crichton, who took office March 23, 1908. He is held directly responsible for the conduct of his department and is given ample authority to enforce the city ordinances and regulations relative to health matters. He has a chief clerk, who is his executive officer and who, with 2 assistants, keeps all records and compiles the statistical reports. Each branch of the department is headed by a chief inspector, who is responsible directly to the commissioner for the conduct of his division. The chief medical inspector has charge of contagious diseases, school inspection, city hospitals, dispensary, and laboratories.

The city ordinances require the reporting of all contagious diseases. On the receipt of these reports the health department notifies the superintendent of public schools, the chief of police, and the librarian of the public library of the existence of the disease, giving the name, address, and number of house. Smallpox, scarlet fever, diphtheria, and bubonic plague are placarded and quarantined. Other contagious diseases are placarded and excluded from school, but not quarantined. Quarantine is maintained in scarlet fever until desquamation is complete; in diphtheria, until 2 successive negative cultures, at least 24 hours apart, have been obtained, the latter of which is taken by the health department; in smallpox, until all scabs are replaced by healed surfaces.

The maintenance of quarantine and the disinfection of rooms and houses is under the charge of the chief quarantine officer, who has 3 assistants and 6 guards. Following the recovery or death of any quarantined case the room or house is disinfected, formaldehyde gas being the agent used. This is also done on the death or removal of a case of tuberculosis.

Typhoid fever cases reported are investigated by the sanitary inspectors and an effort is made to ascertain the source of contagion and to prevent the spread of the disease.

CITY HOSPITAL.

The department has recently opened a municipal hospital of 56 beds for the treatment of the indigent sick and emergency cases. In connection with this there is an out-patient dispensary for the treatment of the indigent sick. The number of cases treated at this dispensary during 1908 was 3,232. There are no other free dispensaries in the city. To one who has seen the overworked dispensaries of eastern cities the absence of this class of patients in Seattle is sur-

prising and can only be attributed to the almost complete absence of a pauper class. The number of public hospitals, aside from those under the control of the health department, is small, there being but 5 general hospitals and 1 recently established orthopedic hospital. These hospitals are always full and there is room for a larger and more up-to-date hospital.

The only contagious disease hospital aside from the municipal one for smallpox is a small private hospital. The lack of a proper contagious disease hospital is severely felt and constitutes one of the most serious handicaps to competent health work in Seattle at present. It has been impossible to secure an appropriation for this purpose in the past and there has been much opposition to the establishment of such an institution in the city on the part of property owners.

DISPOSAL OF THE DEAD.

The method of disposal of the dead most commonly used in Seattle is interment in the ground, and funerals are generally held from the various undertaking establishments. There are 8 cemeteries within the city limits and 1 crematory. In addition, there is the King County cemetery in which the pauper dead are buried.

Burial permits are issued from the health office in accordance with the state law on receipt of properly filled-out death certificates. In case of a death in quarantine the body must be sealed in a metallic casket if a public funeral is held. Otherwise the body is wrapped in a sheet soaked in formalin and buried directly from the place of death under the supervision of the quarantine officer.

SCHOOL INSPECTION.

Seattle has 61 schools with an enrollment of 26,489 pupils. A system of medical inspection of the pupils has been established by the health department. Ten physicians and 3 nurses conduct the inspection, each school being visited once a week. A physical record of each child is kept on a card from his entrance to school until he graduates or leaves. Children with contagious diseases are excluded from school and readmitted only on permission of the medical inspector. Vaccination is a compulsory condition of entrance to school. Physical defects or other diseases than contagious ones are noted and a card is sent to the parent or guardian calling attention to the child's condition, and if treatment is instituted a return card is filled out by the attending physician.

While not under the supervision of the health department an important factor in the hygienic care of the children of the city is the establishment in the last two years of public playgrounds by the board of park commissioners. Five distinctive playgrounds, improved and equipped, are now in operation and by the end of the year 1909 Seattle will have 19 playgrounds with an area of 100 acres. Gymnastic apparatus and appliances have been established in several playgrounds and are under the supervision of a corps of physical instructors. In addition to these, Seattle has 14 improved and 10 unimproved parks varying in size from 200 acres to 2 or 3 acres.

SANITARY INSPECTION.

The chief sanitary engineer has charge of the sanitary inspectors, market, milk, meat, and plumbing inspectors, watershed patrol, and the rat trappers and poisoners.

A house to house canvas is made by the sanitary inspectors, who report upon every feature of the sanitary arrangement and condition of each house, such as drainage, sewerage, plumbing, ventilation and storage, and disposal of garbage and rubbish. The abatement of nuisances is effected by verbal or written notice, and by prosecuting the owner or ordering the premises vacated if the notice is disregarded. Permits for the construction and repair of plumbing are issued by the sanitary department. A plumbing inspector makes a preliminary inspection when the plumbing has been roughed in, and a final inspection upon the completion of the work.

The inspection of food in Seattle is carried on under the supervision of the State of Washington. Under the authority, however, of one of the city ordinances, which forbids the adulteration of foods, inspection is made by the city sanitary inspectors of meats, butter, candies, and other foods capable of adulteration or sophistication.

MILK INSPECTION.

Within the past year great improvement has been noted in the character of the milk marketed in Seattle and a greater improvement in the conditions under which it is produced. The state law will require, beginning January, 1910, that market milk shall contain less than 200,000 bacteria per cubic centimeter. During 1908, 65.8 per cent of all market milk in Seattle ran below 30,000 per cubic centimeter, and only 13 per cent went above 100,000 per cubic centimeter. The percentage of fats required is 3.20.

The improvement is to be credited to the reorganized city health and sanitation department. Permits to sell and deliver milk in the city or to ship it into the city are issued by the commissioner of health on application and after an inspection of the plant and conditions under which the milk is handled. Inspections are made 3 times a month of all milk and dairy plants and samples taken and analyzed. Samples are taken from wagons, trains, restaurants, and stores at unstated intervals and examined, and punishment is invoked for any failure to comply with the state laws, city ordinances, and rules and regulations of the health department.

WATER SUPPLY.

The water supply of the city of Seattle is from the Cedar River, the source of which is at an approximate elevation of 6,000 feet above city datum in the Cascade Mountains to the southeast of Seattle. The water is brought about 28 miles to the city by gravity through wood-stave pipes. There are in service about 400 miles of water mains, which serve about 37 per cent of the city. It is expected to extend this service to the entire city during the coming year.

The entire water system is owned and operated by the municipality, and power is obtained from the falls of Cedar River to run the municipi-

pal electric-lighting plant. The average cost to the householder for water is \$1 per month.

The watershed from which this supply is obtained contains about 140 square miles. The city has acquired title to about 12 square miles, and 82 square miles are under condemnation proceedings. This will give the city practical control of the watershed, as the balance of the land is for the most part either incapable of improvement or in the government reserve. The policing of this section is in charge of the city health department, and inspectors patrol the course of the river with a view to the prevention of pollution of the city's water supply.

The daily consumption of water is 66,000,000 gallons.

Weekly samples of the water for bacteriological examination are taken at the outlet of the pipe lines which conduct the water into the city, and a graphic curve of the findings is kept on record in the office of the commissioner of health. The bacterial count of Cedar River water varies between 30 and 4,000 per cubic centimeter, usually running from 200 to 1,000 and reaching the highest point after the beginning of the rainy season in the fall.

THE BULLETIN.

A résumé of the work of the health department would be incomplete without a reference to the Bulletin of the Department of Health and Sanitation. This is an 8-page monthly publication issued by the health department and distributed gratis. It contains in addition to the vital statistics for the previous month several articles written for the laity on popular medical or hygienic subjects, and is of undoubted educational value.

DISPOSAL OF WASTE.

The city of Seattle produces about 200 tons of waste daily, including ashes, manure, rubbish, table refuse, etc. The ultimate disposal of this waste is a problem not as yet solved by the municipality. The waste is collected by private wagons, licensed by the city, the householder paying a weekly sum for the service.

In December, 1907, the city completed the erection of a garbage incinerator of the Meldrum type at a total cost, exclusive of grounds, of \$36,134.50. This incinerator has a rated capacity of 67 tons of 2,000 pounds for 24 hours, and uses no fuel other than that contained in the refuse. During the past year this incinerator has burned on an average 70 tons daily, at an average cost of 50 cents per ton. Of the remainder of the city's waste it is estimated that about 70 tons are dumped on the tide flats and burned in the open, and that the balance is disposed of by private burning, dumping into Puget Sound, or on vacant lots.

The present system of garbage collection is unsatisfactory, many outlying parts of the city being unvisited by the collectors. The city health department hopes to have established additional incinerators to dispose of all the city's waste and also some system of municipal collection in the near future.

SEWAGE DISPOSAL.

The sewerage system of the city of Seattle is known as the "combined gravity system." That is, one line of sewer pipe is laid in street or alley, to receive drainage both from private premises and from the streets, and flows by gravity to its outlet, which is in deep water in Puget Sound, far enough from shore not to create a nuisance at the shore line. This system has proven very satisfactory so far, there being no trouble from flotation and its deposit upon the shores of the Sound.

The city of Seattle has an area of about 60 square miles, of which about 22½ per cent is being served by sewers. There are 245 miles of sewers in the city, which have cost to November 1, 1909, \$3,237,-619.76. When a sewer has been laid in any street or alley and accepted by the city, it becomes incumbent upon all abutting property to connect therewith, as provided by city ordinance. Where there is city water service, but no sewer near enough for direct connection, owners are required to install proper cesspool or septic tank to receive the waste matter from their houses. In parts of the city where there is no water service vault toilets are allowed.

LABORATORIES.

The city health department maintains 2 laboratories, one chemical and one bacteriological. In the first are conducted milk, water, and food analyses, while the latter conducts bacteriological examinations of milk and water and tests for diphtheria, tuberculosis, and typhoid fever. In addition, the city maintains the plague laboratory conducted by the United States Public Health and Marine-Hospital Service for the examination of rodents suspected of having bubonic plague.

Three verified human cases of bubonic plague occurred in the latter months of 1907. A vigorous antiplague campaign was inaugurated under the direction of the United States Public Health and Marine-Hospital Service, which campaign was later taken over by the municipal authorities with the exception of the fumigation of ships and the bacteriological examinations. The last plague-infected rat was delivered in September, 1908.

Seattle was confronted by certain special difficulties in its antiplague work. Owing to the newness and rapid growth of the city, the cheapness of timber, and the high wages of labor, lumber is extensively used for building purposes, and the wholesale district is largely built up with wooden structures. Back of the wharves were the railroad tracks, streets, and buildings resting upon piles high in the air above the water and a tide-washed shore line with accumulated rubbish. Along the water front to the south the brush bulkheads harbored immense numbers of rats.

These and other insanitary conditions were greatly mitigated during the antiplague campaign. There is still maintained a vigorous system of inspection with a view to the removal of accumulated rubbish, etc. An unremitting warfare is waged on the rats by means of trappers, poisoners, and bounty. For the bacteriological examination of rats the United States Public Health and Marine-Hospital Service provides a commissioned officer with laboratory equipment.

During the fiscal year ended June 30, 1909, 48,652 rats were examined in this laboratory. This laboratory work is about to be resumed after a temporary suspension owing to the necessity of evacuating the building on account of regrade work.

Owing to the ever-present danger of an invasion of bubonic plague, this or a similar line of work should be a part of public-health routine in Seattle and all other Pacific seaports.

Seattle has a frontage on tide water of about 5 miles. The greater part of this is occupied by wharves. These have been built on piling out into deep water. The wretched condition of this water front from a sanitary standpoint has aroused interest in the project of building a sea wall and filling in to street level the low-lying ground now hidden beneath wooden roadways and buildings erected on piling. This promises not only to be a very expensive proposition, but a long-delayed one on account of questions of authority, responsibility, and title to shore line.

The sanitary condition of Seattle, judged from the statistical tables and the amount of sickness, is very good, but in forming any judgment of this sort the character of the population must be taken into consideration. The city is young and rapidly growing. The people who come here are in some measure of the pioneer class; they are, as a rule, young and in good physical condition.

The residences are frame for the most part and, building lots being large, each house is separate from its neighbor and has ample air space and light. The hilly nature of the city, while it lends variety to the landscape and simplifies the disposal of sewage, is undoubtedly a causative factor in the high death rate from organic heart disease.

Sanitary questions demanding immediate attention are the collection and disposal of garbage and the establishment of a contagious-disease hospital. As these questions involve an expenditure of extra money they will, under the city charter, have to be voted upon by the citizens after the municipal authorities have arrived at some definite plan of solving these questions.